Docket: MM 99-325
Comment

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D. C. 20554

In the Matter of: A new Digital Radio Service
To utilize white space frequencies
Vacated high VHF TV Channels 7-13
Except where HIGH VHF channel is used
For DTV on a per market exclusionary basis.
To eliminate need for IBOC power increases & interference issues.

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In as much as the analog shutdown of television broadcast has finally occurred;
In as much as the FCC has been seeking usage for the “white space” created by the vacated TV channels;
In as much as the FCC currently has before it for consideration power increase or other action, instant or postponed;
In as much as the issues of IBOC concern significant interference to analog FM;

Commented is proposing an alternative solution to IBOC power increases, IBOC interference to analog FM radio services, eventual elimination of various set power levels to allow equal coverage of from all stations, and allow the abandonment of FM and AM broadcast intermixture of analog and digital signals, and provide sufficient channels that all current licensees in a market can have a full facility license.

Attachment A is an Excel file of the proposed new digital aural service channels. It fills the spectrum from 174 to 216 MHz, replacing all the high VHF TV channels. Each channel is 200 kHz wide, with an occupied bandwidth of 190 kHz. It is proposed that the allowable modulation mode to be based on DVB MPEG 4, or COFDM to minimize consumer receiver cost and provide sufficient bandwidth to provide multiple aural programs per channel of service. Other non propriety modes could be used.

To avoid interference to existing DTV vision service still operating on VHF channels 7-13, it is proposed that a bandwidth of 7 MHz be left unassigned to provide a 250 kHz guard band between digital aural service and digital vision service. The adjacent areas would be limited to co-channel DAS [DIGITAL AURAL SERVICE] to DTV minimum spacing of 150 kilometers, and the F50,10 contour of the digital aural service may not cause any overlap of the DTV station maximum protected service area.

The new digital aural service would be allowed 10 kW average power for all licenses on all channels. In service in ZONES currently allowed 50 kW maximum FM analog power. In all other ZONES where analog FM power is allowed to be 100KW, the DAS [DIGITAL AURAL SERVICE] service would be allowed 20 kW, Provided, the 20 kW DTV service contour does not pass the zone change locators by 15 kilometers. Power of the higher zone would be reduced to protect the lower power zone, but not below 10 kW. For antennas above 500' HAAT, appropriate power reductions per the current FCC tables, part 73.

A rural service, defined as a community outside of any SMSA or more than 35 milometers from the main post office of the SMSA central city, or that is served by less than 5 SMSA signals may apply for less operating power, provided coverage equals or is greater than any current analog aural service in the community. A rural service DAS [digital aural service] station may not locate its transmitter within the service contour of any SMSA. A rural service DAS [DIGITAL AURAL SERVICE] must have its transmitter located to provide a 50 dBmV contour over the entire city of license and must generate a minimum of 20 hrs per week local programming.

Frequencies would be occupied on a first come first served basis, beginning at 174.2 MHz, and continuing upward on alternating channels, leaving the first adjacent channel empty.

First adjacent channels would be reserved exclusively for rural community licenses.

Outside of rural stations service area, wireless microphone, intercom licenses, and low power itinerant uses in SMSA areas would be allowed using not more than 25 kHz bandwidth and not more than 100 milliwatts power ERP, with antennas directly mounted in or on the device, not to exceed one half wavelength in radiating element length. Inside a rural service community, licensed wireless devices may be used on any un-occupied rural frequency, with the same power and device limitations but can be displaced at any time and operate at the risk of interference from any service.

Order of applications:

Those stations currently operating mixed digital and aural services on analog AM and FM frequencies

as a part 73 license holder would be granted immediate license on an assigned channel, selected on the basis of first come first served.

Second tier applications would be allowed for all part 73 license holders NOT currently transmitting a digital signal with their analog signal.

Third tier would be stations that agree to return their analog frequencies after ten years from the sign on date of their DAS [DIGITAL AURAL SERVICE] service.

Fourth Tier, any station classified as a “low power” FM.

Fifth tier, new applications for full power DAS [DIGITAL AURAL SERVICE] service.

Rural community licenses would be processed as received at any time.

There would be no mutually exclusive applications allowed, as there are sufficient channels available to replicate all existing license holders.

Ownership limits:
Any part 73 license holder may own a number of DAS [DIGITAL AURAL SERVICE] facilities equal to its analog AM and FM facilities in the same SMSA. Channels would be assigned sequentially. Thus an entity with two AM and two FM facilities would make one application for four DAS [DIGITAL AURAL SERVICE] facilities and be assigned sequential channels, 301, 303, 305, 307. Thus allowing a single radiating system to service an owner's entire collection of facilities.

Licenses may utilize any technology to allow combining radiating systems to multiple users in accordance with good engineering practices used to combine analog transmitters to a single emitter. If technology allows multiple channels may be modulated via a single transmitter device provided the internally generated IM products do not exceed an aggregate –54 dBc at the final output. A final output occupied bandwidth shall not exceed 190 kHz, and sidebands must be –66 dBc at 100 kHz from reference center channel frequency, -90 dBc at 150Khz or greater.

Frequency stability shall be better than 3 Hz. Data rate stability shall be better than .0001%. Transmitted signal to noise ratio shall exceed 30 dBc.

The Commission would also mandate that all consumer aural service devices be capable of receiving and decoding to baseband aural signals, be designed and equipped to receive both the current DTV aural channels and all new DAS [DIGITAL AURAL SERVICE] signals including sub channels. Such mandate to be effective within 12 months of the creation of the new digital aural service. This to

provide replacement for those units manufactured prior to analog shut off that incorporated a “TV band” to allow reception of DTV and the new DAS [DIGITAL AURAL SERVICE] systems. Thus incorporating homeland security EAS, WARN and other current systems for public safety. In addition, such devices would incorporate a user selected aural or visual alert on its front panel to indicate EAS, WARN or other NWS alerting system activation.

Any license holder currently employing digital radio signals on their analog service would agree to cease such signals ten years after the commencement of operation of digital aural service or sooner as the license holder chooses. A single 90 day period prior to shut off of current digital service with a required 1 minute per half hour announcement of the shut down date to serve as public notice. License holders may at their choosing, also make such announcement on their analog service at times and intervals of their choosing.

Similar to the end of FM broadcast service on the six meter band, there is insignificant users at this time of IBOC consumer equipment that no major financial interest is present. The Commission could allow continuation of the current low fidelity digital system is stations so chose, but that should preclude the license holder from a new digital only aural band channel.

Propagation on the new digital aural service band is not significantly different than on the current 3 meter FM band. In addition, it may be possible due to the harmonic relationship of 88-108 to 174-216 MHz that some existing antennas may operate on the new frequency with little or no modification. Home receiver antennas would be better is some instances in that quarter-wave length FM antennas simply become half wavelength antennas.

Further, being that the service is proposed to exist 24/7 additional planning factors relevant to co-existence with DTV operations insures low or non-existent interference. Whereas unlicensed or licensed white space transmitters proposed in residential areas has shown to cause interference.

CONCLUSION: Everybody wins.

The Commission should delay any and all action on IBOC digital aural broadcasting power increase until it has had opportunity to study and evaluate the alternatives presented here. The proposed digital aural service solves numerous issues before the Commission with regard to IBOC power and interference, additional channels for current users, elimination of classes of station based on power levels, reservations of frequencies for rural services with limitations to prevent unscrupulous LPTV and LPFM operators from moving their rural license transmitter facilities to large SMSA markets where their signal is no longer available to the original community of service, utilizes existing white space that is already in the broadcast service bands, and provides for multiple high fidelity programs for each licensed channel similar to digital television service, and provides additional channels for

new applicants to provide a wider spectrum of voices in the media services.

In addition the eventual migration from 88-108 MHz would allow aviation services now on frequencies from 108 MHz and up to expand navigation or communication facilities to enhance the safety of air traffic and passengers, allowing new digital signals and other technology enhancements.

Current low power NCE’s that are limited by multiple co and adjacent channel operations could enjoy the service area and lack of interference the new DAS would provide with a minimum of conversion expense.

If desired, NCE reservations could be provided as a 1 in 20 channel ratio, directly intermixed with commercial operations, providing over 25 NCE reservations for full power operation and any number of rural channels. NCE would not be precluded from applying for a non NCE channel.

Regards,
Henry Ruhwiedel
SBE CPBE, 42 yr veteran broadcast engineer, former WARC working group member and secretary, and former station owner, now major market TV-FM chief engineer.